

Space Weather Forecast

Issued on Tuesday, 17 October 2023 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of G1/Minor Storm intervals on Day 1-2 (17-18 Oct).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low, with occasional Common class flares. Peak flare was from a new sunspot region rotating onto the northeast limb. The largest regions are both relatively mature spots in the northwest and near centre disc respectively, and showed very little development. The other regions are all smaller and simple, to give a total of six regions. An energetic (long lasting) common class flare occurred from a sunspot in the northeast which then decayed. This flare produced a CME (coronal mass ejection), with analysis still ongoing. However preliminary assessment suggests this either missing or with a slight glance possible early day 4 (20 Oct). .

Solar Wind / Geomagnetic Activity: Solar winds were indicative of background slow wind. The speed of the wind erratically eased from 380 km/s to around 330 km/s. Interplanetary magnetic field (IMF), was weak. The north-south component was also weak, but mainly positive (northward). Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low activity is expected, with only slight chance of isolated Moderate flares.

Solar Wind / Geomagnetic Activity: Two weak CMEs are forecast to give a glancing impact early on 18 Oct, perhaps as a single combined arrival. Otherwise the onset of coronal hole sourced fast winds is expected day 1 (17 Oct), later and likely weaker than originally anticipated, but still giving a potential for winds to increase to around 450-500km/s. These winds, along with any CME influence, then ease later day 2 (19 Oct) with background slow wind conditions following. Mainly Quiet geomagnetic activity forecast at first, but Unsettled to Active spells likely with a chance G1 Minor Storm intervals day 1 and 2 (17-18 Oct). Activity easing back to mainly Quiet day 3 and 4 (19-20 Oct).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background, with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	30	30	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	20	30	30	40
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)